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AND
PHOTOGRAPHIC
ENLARGER
A MAGAZINE OF POPULAR SCIENCE FOR THE LECTURE-ROOM AND THE DOMESTIC CIRCLE.
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NOTICES.

THE *Optical Magic Lantern Journal and Photographic Enlarger* is issued on the 1st of every month, price Two Pence, and may be obtained from all Newsvendors, Railway News Stalls, Photographic Dealers, or from the Publishers, at the following rates, post free:—

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NOTES.

The Making of an Animated Photograph.—Messrs. Hepworth and Company, of Walton-on-Thames, have issued an interesting description of their works in the form of a booklet, which also explains the various manipulations required, from the taking of the film negative to the finished transparency ready for projection.

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Photographic Salon.—The eighth yearly exhibition will be held at the Dudley Gallery, Egyptian Hall, Piccadilly, W., from September 21st to November 3rd. Entry forms and full particulars may be obtained from the Hon. Secretary.

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New Cinematographic Films. — The Warwick Trading Company, Limited, of Warwick Court, High Holborn, are constantly bringing out new war films. "This (they state) is the first instance in history where the cinematograph is officially recognised by the War Office, and our staff of operators are the only ones accorded the privileges and facilities of regular correspondents during the war with the Transvaal."

Royal Photographic Society's Annual Exhibition.—The forty-fifth annual exhibition in connection with the Royal Photographic Society, will be held from October 1st to November 3rd, at the New Gallery, 121, Regent Street, W. As in past years, the exhibition will be inaugurated (on Saturday, September 29th) by a private view, followed in the evening by a conversazione. Entry forms and full particulars may be obtained from the Hon. Secretary at the headquarters of the Society, 66, Russell Square, W.C.

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New Style of Advertising.—An ingenious method of advertising is about to be adopted by Chadwick's Patent Advertising Company, Limited, of Manchester. At the tail end of a large van a screen is erected, when by means of a cinematographic lantern placed in front, animated advertisement films are projected on the screen, meantime the van is hauled about the streets. This will mean rather awkward work for the operator should the roads be at all uneven.

◆ ◆ ◆

A Little Knowledge is Sometimes Dangerous.—An intending purchaser of a cooling plant some time ago visited a well-known firm of makers of carbonic acid ($C O_2$) machines. The manager explained that they had just completed a style of machine which he thought would be likely to suit the customer, so asked him into the workshops to inspect it, at the same time explaining that "this particular one is the smallest size we make." The intending purchaser examined the machine for some time, and after asking a few questions said that he considered this particular machine rather small for his requirements—he would require either at least a $C O_3$ or $C O_4$ size.

◆ ◆ ◆

Acetylene Explosion.—We have often cautioned our readers anent examining for leaks in acetylene generators with a naked light. We learn that a gentleman in Brooklyn, New York, lately built a large generator for supplying his private house with acetylene. He took a light to examine a leak—result, an explosion which hurled him several feet, injuring him so severely that he died in a few hours. The tank of the generator was shot through the roof of the building, making a hole about 5 feet square.

◆ ◆ ◆

Acetylene in Siberia.—Acetylene gas is being largely used in Siberia in connection with various engineering constructions, and is considered a great boon.

A Row about the Dundee School Lantern.

IT must be quite an evening's amusement to be present at the monthly meetings of the Dundee School Board. On page 82 of last issue we gave particulars of one of their meetings. At a later meeting, held on the 25th ult.,

Mr. Smart objected to a minute of the Evening Schools Committee in reference to the use of a lantern in Tay Street School, and the offer of Mr. Brebner, Rector of the Harris Academy, to give four lectures. The minute also agreed that till the result of the experiment, lanterns should not be used in any other school. Mr. Smart objected to the minute as being irregular. It was a great pity that a thing which might have been settled by a few business men in ten minutes had dragged itself so long before the Board. He thought the Committee had gone quite outside their remit in deciding as they had done. Besides, they had employed a lecturer and proposed to pay him. The servants of the Board were quite willing to do the work.

The Chairman—The minute does not bear that they propose to pay the lecturer.

Mr. Smart said that he was to be paid. Now, the Committee were never asked to employ Mr. Brebner. The whole thing was irregular, and he much regretted that they could not come to a fair issue on the matter. He wanted a straightforward vote on the question. Canon Holder, for instance, was so very benighted last month that he thought it would be better to leave it to the teachers, and now he was adopting a different line this month. Mr. Cameron was not against the lantern, but then he went and voted against it. Mr. Macdonald and Mr. Mudie were very straightforward. They spoke against it, but did not vote against it. Mr. Dunbar came forward with a house of refuge for them.

Mr. Mudie rose to a point of order. He did not think such language should be allowed about Mr. Macdonald and himself. Besides, this sort of thing was getting quite unbearable. The School Board of Dundee was becoming quite a bear garden. Mr. Smart had used words which were a disgrace and a scandal to the members of the School Board. He appealed to the chair for protection. Neither he nor Mr. Macdonald required to be told that they were straightforward. They did not need either Mr. Dunbar or Mr. Smart to speak for them or provide a house of refuge for them. (Laughter, and hear, hear.) They would vote as they though fit, whether their actions suited Mr. Smart or not.

The Chairman—I knew your remarks would lead to this, Mr. Smart.

Mr. Smart—I am sorry, but what I want is a straightforward vote.

Mr. Mudie—We have had quite enough of this.

Mr. Smart—The whole procedure is irregular. The Committee have gone outside their remit altogether. Either let us bundle this matter out or have done with it on correct principles instead of going through so tortuous a way.

The Chairman—I must ask you to withdraw those words.

Mr. Smart—It is a tortuous way, I insist.

Rev. A. Osborne seconded the motion. The clause referred to by Mr. Smart was not carrying out the spirit of the instruction of the Board.

Mr. G. K. Smith moved the approval of the minute. There had really been far too much heat introduced into the discussion. (Hear, hear.) This was not what could be called an important subject, but it was well that the Board should exercise a certain amount of deliberation over it. However, there was a limit. It was difficult to find out what regularity would be in such a matter. He explained the steps which had led up to the decision of the Committee, and concluded by remarking that there was no necessity for careful examination of every word contained in the minutes. The Board ought not to be hypercritical.

Canon Holder seconded.

Mr. Macphail moved as another amendment that the last clause only of the minute, to the effect that lanterns be not meantime used in any other school, be deleted. He was in favour of lanterns being generally used.

This was seconded.

The Clerk then explained, discussion having ceased, that Mr. Smith's and Mr. Macphail's amendments would be put against each other, and the successful amendment would then be put against Mr. Smart's motion.

Mr. Smart objected to this method of conducting business, whereupon

The Clerk (Sir Thomas Thornton) said he had been Clerk to Dundee public Boards for more than 30 years, and that was the method that had always been adopted.

Mr. Smart—I was speaking to the chair.

The Clerk—But you are attacking me, and I never advise the chair in any other way than I am now advising.

Mr. Smith's amendment to approve the minute having been put against Mr. Macphail's to delete only the clause referring to other schools, the former was carried by nine votes to six. The final vote between Mr. Smart's motion and the successful amendment was, for the motion (6)—Messrs. Macphail, Osborne, Smart, and M'Burney, and Mrs. Martin and Miss Shaw; and for the amendment (9)—The Chairman, Mons. Clapperton, Canon Holder, Messrs. Dunbar, Macdonald, Mudie, Reid, Smith, and Williamson.

Mr. Smart asked that his dissent be recorded.

The Lanternist as Lecturer.

By **GEORGE E. BROWN, F.I.C.**

Continued from page 91.

TRAVEL and touring are, of course, always popular, but they lose half their colour if the lecturer has not himself been over the ground. But let me pass to the second section.

Treatment. I may briefly outline the construction of a lecture thus :—

1. Briefly sketch what you propose saying.
2. Say it.
3. Briefly epitomise, by way of conclusion.

But let operations 1 and 3 be done gently and without too much seeming, the aim of the lecturer being to let the audience imagine they are anticipating arguments and conclusions as the lecture proceeds (human nature is such that they will put this down to their own facility of thought and not to the lecturer's careful prologue), and that they are afterwards themselves summing it all up and pronouncing the verdict. This is where tact comes in.

Arrange, if possible, a quarter of an hour or so of talk before the lights are lowered. You can then see whether you are making yourself heard by those at the back.

If you have what is colloquially called "the gift of the gab," you will not need to write the lecture—at least you may think you do not. As a matter of fact you most probably do need it. It is so easy to make use of words which are not the most apposite possible. Avoid long words. Try to get plain English. Read some of Ruskin's essays like "The Crown-tried Olive" for thoroughly good English words. Then in your written lecture substitute whenever possible the simpler for the more ornamental word. Keep sentences short and crisp.

I know a man who has a popular lecture on "Colour," at the commencement of which he says "Ether is a half-proved entity." His lecture is a failure. It deserves to be. Take it for granted that your audience knows nothing about any subject whatever. In these days of snippety-snack journals, you are pretty certain to be right. Therefore assume nothing. Never use a technical expression when a non-technical one will do, or if you do, explain **the technicality.**

Arrange your slides so that they need no explanation—or as little of it as possible—with the pointer. Admit no slide that is not distinctly relevant, however fine it may be.

Humour is the salvation of many a bad lecture. Unfortunately, humour does not make people laugh like reference to beer or Scotch whisky does. A fitting pleasantry is of the greatest use at the opening, it puts the audience at ease, it assures them that at any rate, if they are not to be greatly instructed, they will not be bored. But unfortunately the early joke often fails to reach the mark, in which case the poor lecturer is obliged to fall back on beer, or the District Council, or the Gas Company.

Before I pass to a few notes on section 3, let me insist that whenever possible the lecture must develop as it goes along, each fact giving a wider outlook, and while making plainer what has gone before, opening the prospect in new directions. I know in many cases this is impossible, but it is the ideal to aim at.

Delivery. Learn your lecture by heart. It is not tedious to do so. Arrange a series of cues, retire with the manuscript to a desert place where no one can hear you, and repeat the whole as far as possible by the cues alone. After about the third time you will be able to go ahead without the cues even. On the platform remember two things:—Go slow—it seems awful to wait a second or two between sentences, but it is a necessity—and never turn your back to the audience to point to things on the screen. The audience can't hear your reflected mumbling. There is no need to shout—a high-pitched voice will reach to the corners of a large hall—but beware of dropping the voice at the ends of sentences. Practice what seems an exaggeration of the final syllable. It will soon come natural. Lastly, just talk to the man in the last row; then you will be all right.

Cinematographic Entertainments in Australia.

By E. H. STEVENSON.

AN account of the entertainments I had the pleasure of giving on board the "Omrah" on my voyage out to Australia was published in the February number of the OPTICAL MAGIC LANTERN JOURNAL. I will now give a few details of my interesting experiences in Victoria. Suppose I write of just one series of engagements, lasting exactly a week.

Well, on Good Friday I left Melbourne at five in the afternoon, at eight I reached Fallarook; here I changed trains, and the journey along to Yea was certainly most wonderful and picturesque. The carriage was provided with a platform, so that passengers could walk out into the open air, and in the moonlight enjoy the journey to the full. To the right of us for many miles was the Dividing Range of mountains, from 3,000 to 4,000 feet high. On our left was a deep ravine, at the bottom of which flowed the Gobur, a rapid river. I reached Yea at eleven, where I was met by the Vicar, the Rev. J. T. Baglin, at whose house I was to stay for some days. Here let me say that the clergy out in the Victorian colony are equal in every way to our clergy at home. The vicar of Yea—a small township nestling among the mountains—I found to be a scholarly and accomplished gentleman, and for real hard pastoral work I have never seen his equal, thinking nothing of preaching at Yea in the morning; then taking a journey of 25 miles on horseback, perhaps in the pelting rain, to preach in the afternoon; then another long journey through a mountainous district to preach at some distant settlement at night.

My first entertainment was at the Yea Shire Hall on the Saturday night. For hours it had been raining in torrents, and as the bulk of our audience—if we had one at all—would have to travel some miles to be present, we gave up all hopes of having an entertainment. Nevertheless a good number turned up, and £9 was taken at the door.

On Sunday I took the service, and preached in the English Church. On Monday night I gave another entertainment in the Yea Shire Hall, and this time to a full house. On Tuesday we were due at a settlement called Strathe Creek. This picturesque spot is 27 miles from the nearest railway station. My lantern, Bioscope, gas, screen, etc., went on early in the day, and I should think lantern apparatus never had a more remarkable journey. The various boxes were securely roped on to a buggy, and for 27 miles they travelled up hill and down dale, then over mountainous roads, now **lost in the bush,** then dragged through a swamp. The vicar and I followed in a trap specially built for travelling in this mountainous district. In due course lantern and lecturer arrived at the church on the mountain side, from which, look which way you would, not a single habitation of any kind could be seen; nothing but mountains and valleys bathed in the moonlight, as far as the eye could reach. But before long the church was packed to the doors, and I need not say that my unique audience were as attentive and interested as any I have faced in the Old Country. We arrived back at Yea at three o'clock the next morning, tired and worn out.

On Tuesday I was expected at Gobur, 25 miles in quite another direction. As before, my apparatus was sent forward in one vehicle while we followed in another. The journey was a charming one, through valleys, dales, and mountain passes all the way, with mountains rising on either side of us covered with bush, scrub, and forest trees to the very summit. There were only four houses within sight of the hall at Gobur, and the majority of people came from stations and sheep farms on the distant mountain sides, and many from over the ranges. We stayed at Gobur over-night, being most kindly entertained by a deaf but sweet old lady at a sheep station.

On Thursday I gave my fifth entertainment at Spring Creek. We had a charming journey of 25 miles in a buggy through magnificent mountain scenery. Not more than half-a-dozen in my audience had ever seen animated pictures before, so they were not satisfied with an ordinary entertainment of 90 minutes; so we prolonged our show till within an hour of midnight. The great difficulty one has to contend with out here is the supply of oxygen gas. Most operators use generators, that made by Mr. Alexander Gunn, of Melbourne, being the most popular. I have succeeded in getting a supply of oxygen in cylinders, but can only get it compressed up to 90 instead of 120 atmospheres, as at home; and, of course, the price is very different, 1s. per ft. being the ordinary price.

On Saturday I went on to Alexandra, from thence I took the mail coach to Marysville, a mountain journey of 30 miles through primeval forest and Australian bush; the mail coach, on which I was the only passenger, carrying the letters to the bushmen, not taking them to their lonely homes, but leaving them in boxes (without locks and sometimes without even tops) fastened to trees in the forest, and the men coming through the almost **trackless bush** to these boxes for their valued letters. I spent Sunday at an hotel at Marysville, one of the most secluded and charming mountain resorts in Victoria, surrounded on every side with dense and almost impregnable forest and lofty mountains, and so much out of the world that I was told I should have to travel 25 miles if I wished to attend service.

In the morning I struck out alone into the forest in search of the Stevenson Falls.

Far down in a gully beneath the water voice, is singing far aloft the magpie. On I went beneath nodding plumes of gigantic tree ferns, and past the stately heights of white and red gum trees with their trunks all silver. After passing all the wealth of a rich mountain valley a louder water voice is heard roaring ahead, and the crown of the bald head of the gorge is seen; we watch for the silver streak of the Fall, and suddenly it appears and justifies its voice. The torrent falls in a series of plunges, leaps, bounds, and cataracts, 300 feet down, and in its fall is often divided and broken by jutting points of rock bordered with fern and scrub foliage. Such grandeur of sight and sound I have not seen in Australia. In the afternoon I set out to climb to the top of Mount Bismark, in search of a hermit who lived on the summit, and had lived here alone for 15 years, 3,000 feet above the sea. I lost my way in the mountain forest. Although I climbed to the top, I failed to find the object of my search; but news got to him somehow that I had been on his track, and he came down to the hotel to see me before I left on the following morning.

What shall I say of my drive from Marysville to Healesville? No language of mine can give you any idea of its awful grandeur. For many miles our path lay up a mountain side 3,000 feet high, and then across the Black Spur. The road was cut out of the side of the solid rock, and were one of the four horses to swerve we should be hurled down to certain death in the abyss beneath. Now we were in the home of the Australian tree-fern, thousands of which we saw over 20 feet high; also innumerable hearts-tongues and stag-horns, and luxuriant growths of maidenhair and lycopodicæ with enormous gum trees 900 feet high, towering lance-like through thick lustrous foliage of light wood and mountain ash, sassafras and rich leaved scrubs. The trees on this mountain track are the growth of centuries, and are the tallest in the world; their fluttering pennants would wave above the dome of St. Paul's. Here, too, is the haunt of the kangaroo, the emu, the wombat, the brown bear, the lyre bird, innumerable parrots, and thousands of venomous snakes. I am not sure that I saw the Black Spur to the best advantage, for late in the afternoon a mist spread over the mountain; but it was glorious in the shadow and shine with its vesture of pearly mist and purple gloom. At seven I reached Healesville, where I caught a train for Melbourne, and this brought to a close a most enjoyable week with the lantern in Australia.

Fig. 1.

The Utilization of Soot for Astronomical Slides

by Theodore Brown.

At some time or other in the course of their experience, most lanternists will have been called upon to make a set of slides to serve as illustrations for an astronomical lecture. In all probability they pursued the usual method of obtaining negatives of the illustrations first, and then making lantern slides by contact afterwards. This was the course that for some little time I myself pursued, but wishing to lessen the cost of production as regards the actual expenditure in money and time, I made a number of experiments from which I derived much valuable information respecting the cheap and rapid production of really efficient lantern slides.

In this article I propose to set forth some of the ideas that I have found most useful and practical, and as it would be quite impossible for me to deal, within the limits of these columns, with the production of every kind of slide, I have confined myself to one only—astronomical slides. Naturally, some apparatus will be needed, but it will be of a very simple character, and easily procured or made by every reader of this paper. I shall content myself with describing just those articles that I have, in actual practice, found most useful. Possibly, as the reader reads on, he will himself think of various apparatus that could with advantage be introduced in the manufacture of astronomical slides, but for all ordinary purposes that which I shall now bring before his notice will be found sufficient.

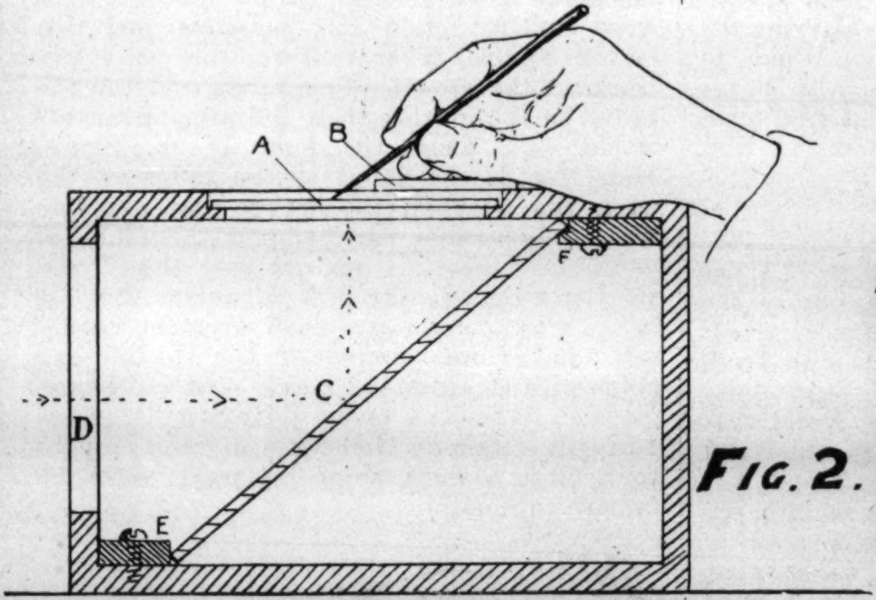


FIG. 2.

First, then, a small desk arrangement, similar to that shown in Fig. II., will be needed. The reader will notice that it is something like an ordinary retouching desk with the shade arrangement removed. For its construction any box will do.

C is a large mirror kept in place by means of the two blocks E and F. This mirror reflects light from an opening D in the side of the box to the slide A, placed in a recess at the top of the desk.

B is a rest for the hand and serves the purpose of a ruler as well. This rest is shown again in Fig. VII.

A number of cases, as shown in Fig. III., are now prepared. An ordinary combined lantern slide cover-glass and binding strips is taken, and three of the strips doubled over and stuck down. The fourth strip B, Fig. III., is fastened to another glass, and a hinge A is thus formed on which the glasses may turn.

The smoke drawing is now made on C, which is then laid down on the other glass. The three sides of the binding that were stuck down now come between the two glasses and prevent the smoked surface from coming into contact with the plain glass—thus protecting it and preventing it from being scratched.

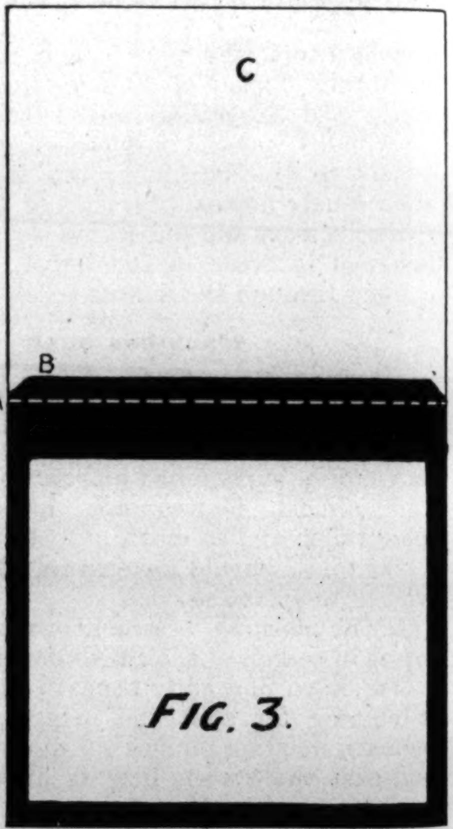


FIG. 3.

To keep both glasses together, ready for insertion into the optical lantern, a rubber band is placed round the two, as shown in the side view, Fig. IV.

This method of binding up is specially adapted to those slides that will only be required for one occasion, *e.g.*, such simple illustrations as comets, or any written matter. After use the soot can be cleaned off, and the case used again when required.

The other apparatus needed are a few lantern plates which have been fixed in the ordinary hypo bath, washed and then dried—thus being left perfectly transparent; a small oil lamp such as shown in Fig. V.; a brush, shown in Fig. VII.; a long piece of wood or steel finely pointed at one end, and some writing paper.

It may be mentioned here that the film on the fixed lantern plates gives a grip to the point of a bow-pen, when any circles are required to be drawn on it.

When the necessary apparatus has been prepared, the lanternist is ready to begin the actual work of making the slides. For the purpose of guiding him in these operations, I will briefly describe how to make a few slides to illustrate certain astronomical phenomena; the slides that I have chosen being some of those that I have myself actually prepared.

Fig. 4

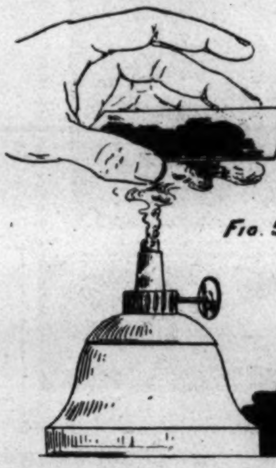


Fig. 5

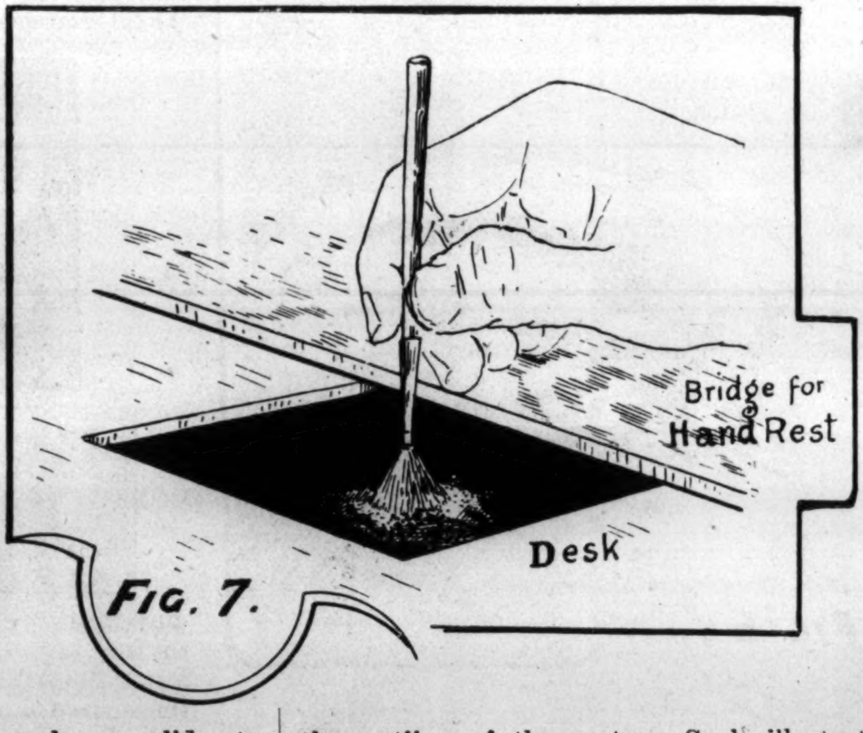


Fig. 7.

Suppose we desire to make a slide to illustrate a few of the comets (Fig. I.). One of the hinged cases previously described (Fig. III.) is taken, and one of the interior surfaces sooted. This operation is performed by holding the glass just above the wick of the oil lamp, which is turned up rather high to permit of its smoking (see Fig. V.). The glass is then moved about to allow the soot to be deposited on its surface fairly evenly. Any desired shade may be obtained by allowing different quantities of soot to be deposited.

When dark enough, the glass is laid in the recess of the desk before mentioned (Fig. II.), with the smoked surface upwards, and the comets are drawn on it by means of the steel point, which removes the soot, leaving clear glass. Where it is necessary to give gradation in degree of light, stippling with a dry brush and re-sooting must be done—operations which will be described presently.

The case is then closed as described, and the slide is completed. When placed in the lantern, the comets will, of course, show out white upon a dark background—and as the soot will not have been deposited absolutely evenly all over the surface of the glass, this background will be of a cloudy nature—thus giving a very good atmospheric effect.

Now I will show how to make a slide to illustrate a typical lunar crater (Fig. VI.). Upon the film surface of one of the fixed lantern plates is sketched in China black ink the outline of the crater. Such illustrations may, of course, be traced by laying the plate over the illustration in a book or magazine. The black shadows cast by the sun (which is supposed to be shining down upon the crater from the left hand side) are also filled in with this ink.

The film side of the plate is then given a coating of soot, till a light brown colour is obtained.

Portions of the soot on the left hand side of the crater are then stippled off. This operation is performed by the following method:—The hairs of the brush with which the lanternist has provided himself, after being thoroughly dried, are spread out, and the brush being held perpendicularly, the tips of the hairs are allowed just to touch the surface of the soot (Fig. VII.). Wherever the soot is touched by the brush, it is removed, and the high lights produced.

The glass is then given another coating of soot. The left side of the crater, where the soot has been stippled off, will thus be of a light brown colour, whilst the remaining parts will be of a darker hue.

The brightest lights, on the top edges of the mountains surrounding the crater, where the sun catches them, are then put in by totally removing the soot with the fine steel point, leaving the clear film.

The slide is then bound up in the usual manner, the only difference being that a rather thicker mask than that usually employed is cut out and placed between the glasses, so that the sooted surface is prevented from coming into contact with the other glass.

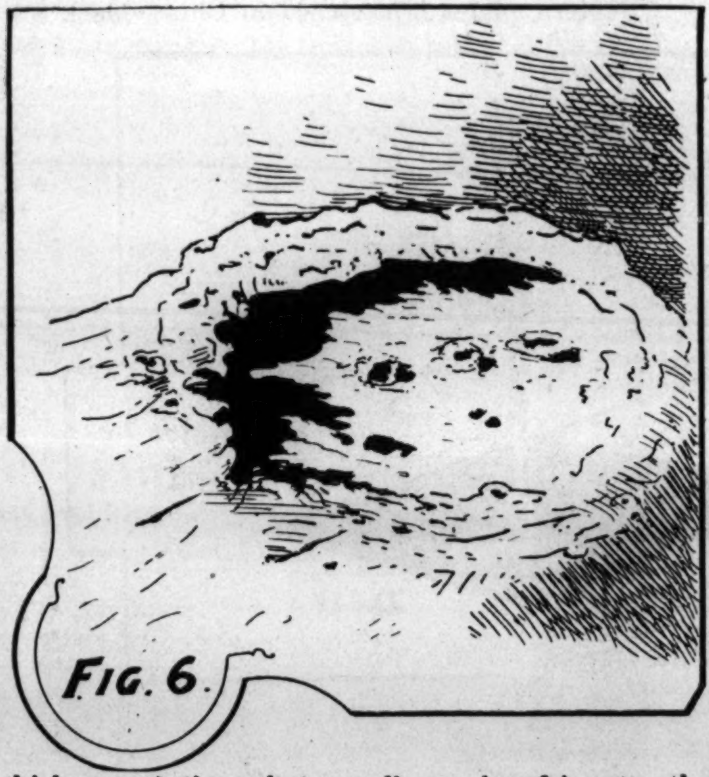


FIG. 6.

When exhibited in the lantern a beautiful effect is obtained, the varying shades of soot producing a bold relief—an effect which cannot possibly be shown in an ordinary line drawing such as Fig. VI.

The next slide will represent the proportions of several planets. First of all discs of paper are cut out to the required diameters, and then attached temporarily to the film side of one of the fixed lantern plates by being slightly damped in the centre. Small hinges of stamped paper are fastened to their backs so that they can be easily lifted off again when desired. The side of the plate to which are attached the paper discs, is then covered with soot in the method described. The discs are then carefully lifted off so as not to disturb the soot, and the plate placed in the recess in the desk, of course with the sooted surface upwards. Parallel lines of varying lengths are then ruled across the clear circles representing the planets—China black ink being used, and the aid of the bridge hand rest (Fig. VII.) being called into requisition.

Fig. VIII. represents the slide so prepared. It is bound up in the manner described.

The next slide, the method of preparation of which I will describe, has for its subject the markings of Mars (Fig. IX.).

A disc of paper is cut out, and in it are cut the openings 1 and 2 (A, Fig. IX.), representing the shapes of the markings—which of course vary according to the aspect of the planet. This perforated disc is then temporarily attached to the surface of a plain lantern cover-glass in the method previously described. The glass is then sooted. The paper disc is removed and the slide will have the appearance of B. Another coating of soot is then allowed to accumulate upon the glass, when it will be like C; the white portions of Mars in B having become light brown, and the other portions, *i.e.*, the markings and surrounding edges of the glass, being made still darker in colour by the second coat of soot. Any high lights may then be put in by stippling, and the slide bound up as before described.

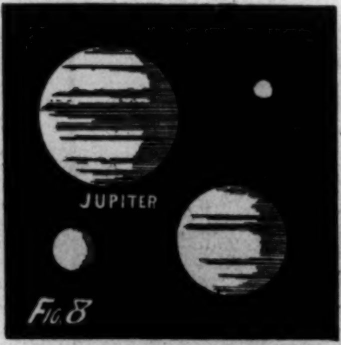


FIG. 8

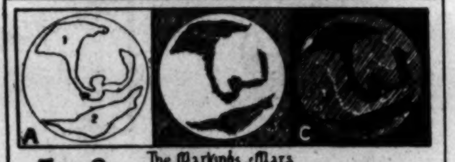


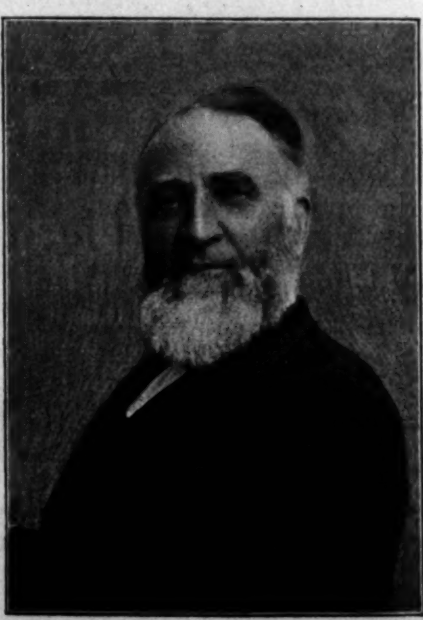
FIG. 9. The Markings of Mars

I have said enough now to show the lanternist what a variety of effects, particularly adapted to the purpose of making astronomical slides, may be produced by the judicious utilisation of soot.

Prominent Men in the Lantern World.

No. XIX.—Mr. E. BAKER.

MR. E. BAKER is a Devonshire man, and spent the whole of his boyhood in that picturesque county. In the year 1860 he took up his abode at Warminster, Wilts, and remained there till 1882, when he removed to Salisbury, where he has resided ever since. His first introduction into the lantern world dates so far back as 1865, and originated chiefly in his desire to propagate Biblical truths and temperance principles in a popular manner in the community in which he lived. That was in the days of the huge gas-bags and bulky appliances, he often smilingly remarks, which continued to harass the ambitious lantern operator for many years. Mr. Baker's fame in this direction soon extended outside Warminster, and subsequently he was invited to exhibit at Southampton, Frome, Trowbridge, and other towns. With each engagement it might be truly said his reputation, viz., that of being a painstaking careful operator, with an unmistakable desire to use the influence of the lantern for good in every sense of the term, increased.



Considerable impetus was given to what has proved a most successful career, by an invitation tendered him by the late H.R.H. Duke of Albany to entertain a distinguished assembly at Boynton, Warminster. His Royal Highness expressed his hearty approval of the exhibition in no unmistakable terms.

Since he took up his abode in the cathedral city, Mr. Baker has displayed increased ardour in his profession by sparing neither time nor expense in securing that perfection which characterises his exhibitions at the present day.

He has accumulated a large stock of slides, numbering upwards of 20,000, which deals with every subject under the sun—Biblical, geographical, educational, temperance, and other subjects too numerous to enumerate. These are now ranged in perfect order upon shelves in his warehouse in Fisherton Street. Mr. Baker is always accessible to those who desire to emulate his example, and who come to him for advice. For a reasonable figure he permits such to hire his slides, and it is needless to say this opportunity is taken advantage of by ministers, temperance advocates, and public lecturers to illustrate the subjects they deal with from time to time in the locality.

Sir Robert Ball, the renowned professor and lecturer on astronomy, who requisitioned the services of Mr. Baker to illustrate one of his astronomical lectures, characterised the lantern used on this occasion as the finest he had ever seen. The lantern used then and now was constructed specially for Mr. Baker by his friend Mr. Beard of London, the well-known inventor of the automatic regulation principle and other improvements in the lantern which have done so much to bring about the **perfection** to be observed at the present day. This lantern embodies three sets of lenses mounted in massive polished brass and constitutes a triple lantern capable of producing the finest dioramic effects. It is superfluous to say that Mr. Baker took prompt advantage of the compressed gas system when it was first introduced, and, in fact, he is always up-to-date with his exhibitions; this quality has been particularly noticeable in relation to the war. During the past winter he has presented a series of beautiful slides depicting the principal events in the campaign to crowded and enthusiastic audiences in all parts of the country. Mr. Baker is now devoting his attention to the cinematograph system, and is a firm believer in its power to popularise still further lantern exhibitions in the future. He is at present having a lantern constructed which will combine the ordinary limelight lantern and cinematograph system; the reason for the adoption of this principle is obvious.

For some time past Mr. Baker has been

associated with the lecturers appointed under the University Extension scheme, having for its object the placing within the reach of the humblest the highest class education attainable. His services are also frequently requisitioned by public lecturers who visit the city, and he is often called upon at short notice to accept engagements to entertain distinguished gatherings in the city and elsewhere. He is a most entertaining host, and has a fund of good stories to recount, which he does as he alone can do it.

Mr. Baker combines with his skill as an operator a pleasing personality, is possessed of a good clear voice combined with elocutionary powers of a marked degree, and also those general qualities which are essential to the successful operator.

It may interest some who cherish similar convictions, and be suggestive to those who do not, to add that for 40 years Mr. Baker has been a total abstainer from all stimulants, in which principles his household have been trained and firmly remain. His testimony is that he has borne the fatigues of prolonged travel by road and rail not only without inconvenience, but, as his present hale and robust condition would indicate, to his positive advantage. Nor has he ever yielded to the fascination of the narcotic weed, deemed by so many a necessity to their happiness and comfort.

In conclusion, we think enough has been said to justify us in placing Mr. Baker in the category of those who are known to our numerous readers as the prominent men in the lantern world.

The photograph is a recent one, and is a truly admirable likeness.

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Which Acetylene Generator shall I Buy?

By **R. J. MOSS**, Birmingham.

NOW that the longest day is past, and two of the Bank Holidays have been enjoyed, the thoughts of lanternists are no doubt wandering onwards to the coming season; while some of the wiser ones will overhaul, repair, and re-arrange their outfit, so as to be quite ready for anything that may turn up, however early in the season.

Foremost among the points to be considered is the question of luminant. Some have found oxyhydrogen a great deal of trouble and too expensive generally for country work, while the oil lamp users find that their pictures seem very poor since the introduction of acetylene. Consequently, there is always quite a number of lanternists who are thinking about trying acetylene.

The idea of danger, once so generally accepted, is now exploded, thanks to fuller knowledge and the introduction of improved apparatus; in fact, at the present time I do not know of a single generator that could fairly be classed as dangerous.

The great problem which the lanternist about to use acetylene has to solve is which is the best apparatus? I put it in this form, because that is how the question is generally asked: "I want the best apparatus I can get; which do you recommend?" Many persons study the catalogues of the various makers, and find that each one is "the only perfect generator yet brought out"; and too frequently the one that does the tallest high faluting is selected. Some write to the technical papers, and get replies from a number of correspondents—very much at variance with each other, and all more or less misleading; others, again, consult their friends or anyone they may come across who has used a generator, and all such advise very much as the spirit moves them. Now these methods, from an expert point of view, are

eminently unsatisfactory,

nor are they likely to help on the acetylene industry, or even give satisfaction to the user.

It is generally supposed that any apparatus which will produce acetylene is all that is required; but it is a serious mistake, especially for a lanternist, because there are really quite a number of important points to be considered if anything like best results are to be obtained, and this brings me to the main point of this article.

What are best results?

Many persons who go into a shop and ask for the best acetylene generator for lantern work, forget that every apparatus has some special feature or advantage; also that their idea of best may not coincide with that of the dealer. I therefore propose, without mentioning any particular machines or systems, to glance at a few of the salient features of some of the best known generators; but I would point out, and strongly emphasise the fact, that it is perfectly impossible to combine them all in any one apparatus.

Not long ago I was speaking to the inventor of a generator specially constructed with one idea in view, and particularly suited for a certain class of work; but which did not compare favourably in the matter of light with another apparatus. He naturally could not see why it did not, or, at least, why it could not be made to; and I had considerable difficulty in convincing him that the very construction which resulted in a brighter light would, if applied to his system, negative the advantages it really did possess.

For the sake of simplicity, I will classify the wants of generator users under the following heads:—

1. Low initial cost.
2. Small size.
3. Light weight.
4. Simplicity of charging and emptying.
5. Small quantity of water.
6. To be able to turn lights out without waste of gas.
7. Effective working without restrictions.
8. Steady light.
9. Most brilliant light.
10. Quick recharging during use if required.
11. Indication as to how fast the charge is being used, and how much longer it is likely to last.
12. Most effective working, combining arrangements for cooling, drying, and purifying the gas, so that there will be no smell or risk of burners going wrong and flames losing brilliancy, even during a three hours' exhibition.

Before going further, I would interpolate a truism generally recognised in the business world, viz., that you cannot get something for nothing; if you save trouble you pay an equivalent in cash, if you get increased light it costs both in money and trouble, if you sacrifice necessary size you also

sacrifice efficiency,

and if you buy a cheap machine you cannot have the advantages that a more skilfully designed, expensively constructed and better built generator will ensure.

I scarcely know which road to take, in order to make my meaning perfectly clear in the space at my disposal. Perhaps it will be best for me to roughly summarise the main features of acetylene production in a steady progression, and it will then be a simple matter to compare this with my table of features already given.

1. Acetylene gas is produced by bringing carbide of calcium and water into contact.
2. Rapid chemical action generates excessive heat.
3. Excessive heat decomposes and disintegrates the acetylene, and creates impurities.
4. Impurities not only tend to choke pipes and burners, but also to impair the brilliancy of the flames.
5. The generated gas will not pass through the pipes unless under some pressure.
6. Pressure is produced through more gas being made than the vessel is capable of holding, without compression.
7. In order to produce excess of gas, more carbide must be damped than is actually required to supply gas to the burners.
8. When lights are turned out and active production of gas arrested, this excess of damped carbide will continue to evolve gas.
9. The higher the pressure the greater the quantity of damped carbide, and consequent aftermake of gas.
10. A large bulk of carbide will produce greater local heat than a subdivided charge, consequently more impurities besides a larger excess of damped carbide.
11. A subdivided charge has exactly opposite results, but needs most

accurate calculation

to balance the automatic control.

12. The light required for lantern and photographic work, must—to be effective—have high actinic properties, and possess more of the violet but less of the yellow rays; this, it must be borne in mind, is in direct contrast to what is best for general lighting, and can only be obtained at a higher pressure and greater consumption of gas, at naturally increased cost.

If intending users of acetylene will compare these two tables, they will at once see that, in spite of what generator makers say, no generator does, or can possess every advantage. We will now take them in detail, and then it will not be difficult to decide which of these advantages will be of most service in our particular case.

1. My first customer scans the list, and frankly says, well I can't help it, I must be ruled by price; to him I say very good, choose a simple though strong machine without any fancy claims, but do not expect to get as good a light as you will sometimes see, and above all do not be disappointed because you do not, yet under no circumstances try to increase the light by putting weights upon the gas bell; if you do, you will destroy the balance of the machine and probably spell trouble. Be satisfied with fair value for your outlay.

2. My next customer says, oh yes! but I don't want a great thing like that, I must have

something that I can put inside my lantern; well my friend you can have it, but bear in mind that such an apparatus can have no room for storage, and no provision for overmake or after-make of gas; fair results can be obtained, though great care must be taken, particularly to start slowly, for if once the production gains on the consumption the generator itself has no power of control, and gas is bound to escape into the room, and perhaps ignite as it issues from the generator. Of course such generators are only built to supply one burner, but even at this they are far superior to the best oil lamp and certainly no more trouble.

3. My third customer insists on light weight, but is not satisfied with the one burner generator as in No. 2, and to such I would utter a caution. You can have your wish, but remember that a light generator must, of necessity, be rather flimsy, and anything flimsy to hold gas is a constant source of anxiety; it needs very careful and constant examination, and before purchasing such, I would insist on every joint being not only seamed but soldered on both sides, and the outer part and gas holder made of a tough material such as hard brass or steel; zinc and soft iron are unsuitable, being easily bent by even a slight blow, and in the bending the solder very often gives way and a leak results.

4. Does not want to soil the hands in charging or emptying. He would like the carbide in some sort of a case just ready to put in, and when done with the machine could be just turned upside down and the lot emptied away without smell or further trouble; there is no difficulty in making such a machine, if you do not mind the extra cost of working and the trouble of piercing holes in the carbide container, while many of the advantages of a well-constructed generator could not be made to apply.

5. We next are confronted by the operator who not only wants small size and light weight, but very little water though he must have a good light; this is a more troublesome customer, because we are obliged to rely upon the system of dripping water on to the carbide, or else a generator of very small dimensions, with necessarily little or no storage. In such generators it is well-known that the action cannot always be relied upon to produce a steady and regular supply of gas, while in some of them overheating takes place to a considerable extent, and thus causes further deterioration of the light. No one can expect best results from such a machine, but if the user gets fair success and his chief want is supplied, then he must rest content.

(*To be continued.*)

Notes and Queries.

F. H.—Your stereoscopic lenses are not a pair, hence your trouble.

Henry Fisher.—We note in the particulars of your attempt at soft soldering, you have forgotten the flux. Put a small quantity of muriatic acid into (say) a bottle, and into this drop some small pieces of zinc until all boiling effect has ceased. Clean the brass work, and on the surfaces to be soldered put a little of this flux. Lay a small piece of solder at the junction and apply heat, either by means of a flame free from soot, or by means of the blow-pipe. We do not know the style of work you are attempting, but if the surfaces are large it might be well to coat one or both with a thin layer of solder before placing together and applying the heat; in this case, as the solder melts pressure must be applied so as to ensure the surfaces being close together. For soldering zinc use the acid only without the addition of any zinc pieces.

Illumination.—You may consider acetylene illumination as about equivalent in price to house gas at 5s. or 5s. 6d. per 1,000 feet.

D. Yates.—We answered your question in last issue; you surely could not have overlooked it.

H. H. Ward.—Your article has reluctantly been held over till next issue for want of space.

Perplexed.—15 grammes are equal to 231 grains or 3 drachms and 51 grains.

Ernest Jennings.—We note your suggestion that the heat given off from the lantern might be utilised for turning the lime. This suggestion has been made on several previous occasions, but we have never heard that such has been produced commercially, but it is quite possible that some ingenious lanternist might have made suitable mechanism for his own use. Of course, a small fan would have to be employed.

H.—Messrs. Riley Brothers publish a small book called *The Lantern Operator's Guide.* Price 3d.

Thomas Seymour.—We are sorry we had to reply to you in the manner we did in last issue, but we tried our best to make out your meaning, without success. However, your second letter is clear. The shadows at the side of disc are caused by the light from the jet not being central to the axis of the optical system. Move the jet slightly sideways until the disc is evenly illuminated. There is nothing mysterious about it.

Screen.—We believe the particulars we published are absolutely correct. If you make some definite objection we can then go into the figures, but all the same we think you will find them correct.

W. G. Clements and Others.—The silhouette slides described by Mr. Theodore Brown are not made by him for commercial purposes, and it is open for any dealer to make and supply them, as stated at the commencement of the series, the only return that Mr. Brown asks from any dealer so making them, is that one slide be sent on to him. You might apply to Mr. W. Cheffins, Holbeach, Lincolnshire, he has remarkable aptitude in the making of such slides.